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UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH ADMINISTRATION
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

INSECT PEST SURVEY

Special Supplement (1949, No. 8)

Issued November 23, 1949

× THE COLONIZATION OF PARASITES OF THE EUROPEAN CORN

BORER, IN THE UNITED STATES IN 1949^{1/} ×

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During the 1949 season 377,953 adult parasites of the European corn borer Pyrausta nubilalis (Hbn.) were released in the United States. The seven species released were the larvaevorid Lydella stabulans grisescens R. D., the ichneumoids Campoplex alcae (Ell. & Sacht.) and Horogenes punctorius (Roman), and the braconids Apanteles thompsoni Lyle, Chelonus annulipes Wesm., Macrocentrus gifuensis Ashm. and Microgaster tibialis Nees. The two species H. punctorius and M. gifuensis and most of the L. stabulans grisescens were obtained from collections of overwintering corn borer larvae made in the Eastern States where these exotic parasites are relatively abundant. C. annulipes was reared in the laboratory from field stock obtained from Massachusetts. Some L. stabulans grisescens and all A. thompsoni were obtained from corn borer larvae shipped from Europe through the cooperation of the Division of Foreign Parasite Introduction, and C. alcae and M. tibialis were obtained from cocoons derived from the same source.

Parasites were released in the following 16 States: Illinois, Indiana, Iowa, Kentucky, Maine, Maryland, Minnesota, Missouri, Nebraska, New Hampshire, New Jersey, Ohio, South Dakota, Virginia, West Virginia, and Wisconsin. Table 1 summarizes the total releases of the seven species in the various States.

The parasites released in 1949 bring the total number of exotic parasites released in the United States as an aid in control of the European corn borer, from the inception of this work to date, to 8,329,643. Table 2 summarizes all of these releases by States and species to October 1, 1949.

^{1/} Financial aid for conduct of the parasite program was supplied by the following State agencies: The departments of agriculture of Iowa, Maryland, and Wisconsin and the agricultural experiment stations of Maryland and Wisconsin. The following State agencies assisted in the release of parasites: The agricultural experiment stations of Indiana, Iowa, Kentucky, Maine, Maryland, Missouri, Nebraska, South Dakota, and Wisconsin, the Illinois Natural History Survey, the Virginia Truck Experiment Station, and the State departments of agriculture of Iowa, Maryland, Minnesota, New Hampshire, West Virginia, and Wisconsin.

Table 1.--The numbers of exotic species of European corn borer parasites released in the United States in 1949

State	<u>Apanteles</u> <u>thompsoni</u>	<u>Campoplex</u> <u>alkae</u>	<u>Chelonus</u> <u>annulipes</u>	<u>Horogenes</u> <u>punctatorius</u>	<u>Lydella</u> <u>stabulans</u> <u>erisescens</u>	<u>Macrocentrus</u> <u>gifuensis</u>	<u>Microgaster</u> <u>tibialis</u>	Total
Illinois	-	-	-	-	-	17,815	-	17,815
Indiana	-	-	-	-	-	15,454	-	15,454
Iowa	-	-	2,563	917	<u>1</u> /960	82,821	-	87,261
Kentucky	-	-	1,611	-	-	7,119	-	8,730
Maine	-	-	12,598	-	-	7,252	-	19,850
Maryland	-	172	19,685	494	724	95,369	499	116,943
Minnesota	-	-	5,623	-	-	3,277	-	8,900
Missouri	-	-	-	-	-	7,886	-	7,886
Nebraska	-	-	2,070	-	489	8,184	-	10,743
New Hampshire	-	-	1,790	-	-	9,326	-	11,116
New Jersey	40	972	<u>1,319</u>	-	-	6,158	261	8,650
Ohio	-	-	-	-	-	26,449	-	26,449
South Dakota	-	-	10,482	-	-	-	-	10,482
Virginia	-	-	2,677	-	-	-	-	2,677
West Virginia	-	-	-	-	-	6,200	-	6,200
Wisconsin	-	-	5,692	132	-	12,973	-	18,797
Total	40	1,144	66,010	1,543	2,173	306,283	760	377,953

1/ The production from French sources was included with domestic flies in one Iowa locality.

Table 2.--Total numbers of European corn borer parasites released in the United States up to
October 1, 1949

State	<u>Apanteles</u> <u>sp.</u>	<u>Apanteles</u> <u>thompsoni</u>	<u>Aplomya</u> <u>mitis</u>	<u>Bracon</u> <u>atricornis</u>	<u>Campoplex</u> <u>elkæ</u>	<u>Campoplex</u> <u>multicinctus</u>	<u>Campoplex</u> <u>pyraustæ</u>	<u>Chelonus</u> <u>annulipes</u>
Connecticut	-	21,268	178	12	1,057	-	1	54,105
Delaware	-	-	-	-	-	-	-	2,229
Illinois	-	-	-	-	-	-	-	1,381
Indiana	-	5,700	8	-	5,161	-	-	7,496
Iowa	-	-	-	-	-	-	-	6,680
Kentucky	-	-	-	-	-	-	-	1,611
Maine	-	-	-	-	-	-	-	12,598
Maryland	-	-	-	-	172	-	-	23,651
Massachusetts	388	69,139	514	127	28,526	1,129	1,697	16,010
Michigan	-	34,837	395	-	24,075	-	-	6,363
Minnesota	-	-	-	-	-	-	-	5,623
Missouri	-	-	-	-	-	-	-	-
Nebraska	-	-	-	-	-	-	-	2,070
New Hampshire	-	-	-	-	-	-	-	1,790
New Jersey	-	52	-	-	972	-	-	10,804
New York	3	51,106	463	-	9,279	61	16	137,821
North Carolina	-	-	-	-	-	-	-	-
Ohio	-	52,505	1,664	-	36,398	357	38	22,952
Pennsylvania	-	5,774	20	-	550	-	-	-
Rhode Island	-	11,756	188	211	4,636	123	47	7,523
South Dakota	-	-	-	-	-	-	-	10,482
Vermont	-	-	-	-	-	-	-	6,982
Virginia	-	-	-	-	-	-	-	14,065
West Virginia	-	-	-	-	-	-	-	-
Wisconsin	-	-	-	-	-	-	-	6,393
Total	391	252,137	3,430	350	110,826	1,670	1,799	358,629

Table 2.--(Continued)

State	<u>Eulophus</u> <u>viridulus</u>	<u>Exeristes</u> <u>roborator</u>	<u>Horogenes</u> <u>punctorius</u>	<u>Lydella</u> <u>stabulans</u> <u>grisescens</u>	<u>Macrocentrus</u> <u>gifuensis</u>	<u>Meteorus</u> <u>nigricollis</u>	<u>Microbracon</u> <u>brevicornis</u>
Connecticut	17,200	-	6,882	42,723	23,970	-	4,952
Delaware	6,000	-	3,959	3,179	81,789	-	-
Illinois	2,961	2,302	5,273	14,527	183,367	-	3,635
Indiana	8,646	22,905	10,224	37,121	157,914	-	105,109
Iowa	18,486	-	15,989	53,934	689,797	-	-
Kentucky	2,834	-	1,148	2,434	40,123	-	-
Maine	-	-	-	1,927	7,252	-	-
Maryland	7,639	-	7,617	19,287	276,996	-	1,616
Massachusetts	88,494	54,957	30,938	92,087	82,444	-	1,084,590
Michigan	44,037	86,607	11,987	121,219	44,710	-	534,334
Minnesota	4,497	-	1,815	4,292	45,247	-	-
Missouri	-	-	468	995	30,372	-	-
Nebraska	1,980	-	-	489	8,184	-	-
New Hampshire	-	-	593	5,569	9,326	-	-
New Jersey	8,507	-	4,349	9,111	114,603	-	11,857
New York	57,341	40,050	17,994	127,312	107,503	-	354,265
North Carolina	1,968	-	481	902	7,889	-	-
Ohio	103,634	87,826	45,987	220,896	179,400	-	587,583
Pennsylvania	3,994	20,119	3,290	14,072	91,587	-	127,305
Rhode Island	7,446	-	14,572	35,293	39,182	8	-
South Dakota	-	-	-	-	-	-	-
Vermont	-	-	2,279	9,813	-	-	-
Virginia	3,974	-	4,325	8,148	106,457	-	5,157
West Virginia	-	-	-	-	6,200	-	-
Wisconsin	4,744	-	4,228	7,773	70,520	-	-
Total.....	394,382	314,766	194,398	833,103	2,404,832	8	2,820,403

Table 2.-- (Continued)

State	<u>Microgaster</u> <u>tibialis</u>	<u>Nemorilla</u> <u>floralis</u>	<u>Phaeogenes</u> <u>nigrifidens</u>	<u>Pseudoperichaeta</u> <u>erecta</u>	<u>Pseudoperichaeta</u> <u>roseanae</u>	<u>Zaleptopygus</u> <u>flavo-orbitalis</u>	<u>Total</u>
Connecticut	7,101	533	1,620	193	7,754	1,483	191,032
Delaware	-	-	-	-	-	-	97,156
Illinois	-	-	-	-	-	-	213,446
Indiana	8,985	-	-	-	8,526	-	377,795
Iowa	-	-	500	-	-	-	785,386
Kentucky	-	-	-	-	-	-	48,150
Maine	-	-	-	-	-	-	21,777
Maryland	499	-	-	-	-	-	337,477
Massachusetts	84,689	371	21,885	844	64,755	6,762	1,730,346
Michigan	81,747	-	3,933	-	17,896	-	1,012,140
Minnesota	-	-	-	-	-	-	61,474
Missouri	-	-	-	-	-	-	31,835
Nebraska	-	-	-	-	-	-	12,723
New Hampshire	-	-	-	-	-	-	17,278
New Jersey	2,070	-	4,037	-	-	1,192	167,554
New York	34,752	-	569	4	29,743	1,109	969,391
North Carolina	-	-	-	-	-	-	11,240
Ohio	138,585	843	8,306	499	32,334	5,145	1,524,952
Pennsylvania	6,842	-	347	-	3,800	-	277,700
Rhode Island	19,740	-	12,037	-	9,305	1,014	163,081
South Dakota	-	-	-	-	-	-	10,482
Vermont	-	-	-	-	-	-	19,074
Virginia	3,199	-	-	-	-	2,971	148,296
West Virginia	-	-	-	-	-	-	6,200
Wisconsin	-	-	-	-	-	-	93,658
Total.....	388,209	1,747	53,234	1,540	174,113	19,676	8,329,643

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